

3 AMP LOW DROPOUT POSITIVE ADJUSTABLE REGULATOR APPROVED TO DESC DRAWING 5962-88646



Three Terminal, Positive Adjustable Low Dropout Voltage Regulator In Hermetic Packages

FEATURES

- Similar To Industry Standard LT1085
- Approved To DESC Standardized Military Drawing Number 5962-88646
- Adjustable Output Voltage
- Built In Thermal Overload Protection
- Short Circuit Current Limiting
- Maximum Output Voltage Tolerance is Guaranteed To $\pm 1\%$
- Guaranteed Dropout Voltage At Multiple Current Levels

DESCRIPTION

This three terminal positive adjustable voltage regulator is designed to provide 3.0A with higher efficiency than conventional voltage regulators. This device is designed to operate to 1 Volt input to output differential and the dropout voltage is specified as a function of load current. Supplied in easy-to-use hermetic TO-257, SMD-1 or TO-3 packages, this device is ideally suited for Military applications where small size and high reliability is required.

ABSOLUTE MAXIMUM RATINGS @ 25°C

Power Dissipation (P_d)	Internally Limited
Input - Output Voltage Differential	35 V
Operating Junction Temperature Range	- 55°C to + 150°C
Storage Temperature Range	- 65°C to + 150°C
Lead Temperature (Soldering 10 seconds)	300°C
Thermal Resistance:	
θ_{JC} (SMD-1)	3.5°C/W
θ_{JA} (SMD-1)	3.5°C/W
θ_{JC} (TO-257)	4.2°C/W
θ_{JA} (TO-257)	42°C/W
θ_{JC} (TO-3)	3.0°C/W
θ_{JA} (TO-3)	35°C/W
Maximum Output Current	3.0 A
Recommended Operating Conditions:	
Output Voltage Range	3.3V to 15 V
Ambient Operating Temperature Range (T_A)	- 55°C to + 125°C
Input Voltage Range	5V to 25 V

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OM1850STM OM1850NMM OM1850NKM
ELECTRICAL CHARACTERISTICS $-55^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$ (unless otherwise specified)

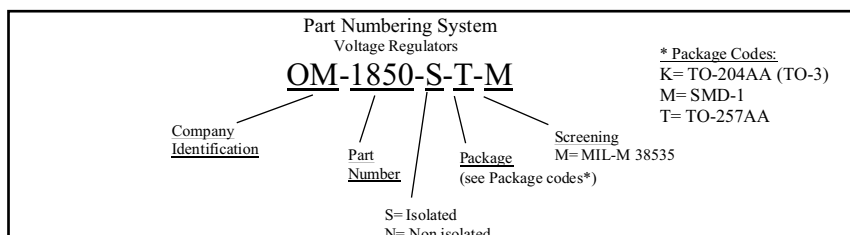
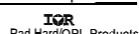
Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Reference Voltage	V_{REF}	$ V_{\text{IN}} - V_{\text{OUT}} = 3.0 \text{ V}, T_A = 25^{\circ}\text{C}$ $I_{\text{OUT}} = 10 \text{ mA}$	1.238	1.262	V
		$1.5 \text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 25 \text{ V},$ $10 \text{ mA} \leq I_{\text{OUT}} \leq 2.0 \text{ A}$	• 1.220	1.270	V
Line Regulation (Note 1)	$\frac{\Delta V_{\text{OUT}}}{\Delta V_{\text{IN}}}$	$1.5 \text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 15 \text{ V},$ $I_{\text{OUT}} = 10 \text{ mA}, T_A = 25^{\circ}\text{C}$		0.2	%
		$15 \text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 35 \text{ V},$ $I_{\text{OUT}} = 10 \text{ mA}$	•	0.5	%
Load Regulation (Note 1)	$\frac{\Delta V_{\text{OUT}}}{\Delta I_{\text{OUT}}}$	$ V_{\text{IN}} - V_{\text{OUT}} = 3.0 \text{ V}, T_A = 25^{\circ}\text{C}$ $10 \text{ mA} \leq I_{\text{OUT}} \leq 2.0 \text{ A}$		0.8	%
			•	1.0	%
Dropout Voltage	V_{DO}	$I_{\text{OUT}} = 2.0 \text{ A}, \Delta V_{\text{REF}} = 1\%$	•	1.5	V
Thermal Regulation	-	30 ms pulse, $T_A = +25^{\circ}\text{C}$		0.02	%/W
Ripple Rejection	$\frac{\Delta V_{\text{IN}}}{\Delta V_{\text{OUT}}}$	$f = 120 \text{ Hz}, C_{\text{Adj}} = 25 \mu\text{F},$ $C_{\text{OUT}} = 25 \mu\text{F}$ (tantalum), $I_{\text{OUT}} = 2.0 \text{ A},$ $ V_{\text{IN}} - V_{\text{OUT}} = 3.0 \text{ V}$	• 60		dB
Adjust Pin Current	I_{Adj}	$1.5 \text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 25 \text{ V},$ $10 \text{ mA} \leq I_{\text{OUT}} \leq 2.0 \text{ A}$	•	120	μA
Adjust Pin Current Change	ΔI_{Adj}	$1.5 \text{ V} \leq V_{\text{IN}} - V_{\text{OUT}} \leq 25 \text{ V},$ $10 \text{ mA} \leq I_{\text{OUT}} \leq 2.0 \text{ A}$	•	5.0	μA
Minimum Load Current	I_{Min}	$ V_{\text{IN}} - V_{\text{OUT}} = 24 \text{ V}$	•	10	mA
Current Limit	I_{Lim}	$ V_{\text{IN}} - V_{\text{OUT}} \leq 5.0 \text{ V}$	• 3.2		A
		$ V_{\text{IN}} - V_{\text{OUT}} = 25 \text{ V}$	• 0.2		A
Temperature Stability (Note 2)	$\frac{\Delta V_{\text{OUT}}}{\Delta T}$	$-55^{\circ}\text{C} \leq T_J \leq +125^{\circ}\text{C}$	•	1.5	%
Long Term Stability (Note 2)	$\frac{\Delta V_{\text{OUT}}}{\Delta T}$	$T_A = +125^{\circ}\text{C}, t = 1000 \text{ hrs}$		1.0	%

Notes:

- Line and Load Regulation are measured at a constant junction temperature using a low duty cycle pulse technique. Although power dissipation is internally limited, regulation is guaranteed up to the maximum power dissipation of 30 W. Power dissipation is determined by the input/output differential voltage and the output current. Guaranteed maximum power dissipation will not be available over the full input/output voltage range.
- Guaranteed by design, characterization or correlation to other tested parameters.
- The • denotes the specifications which apply over the full operating temperature range.

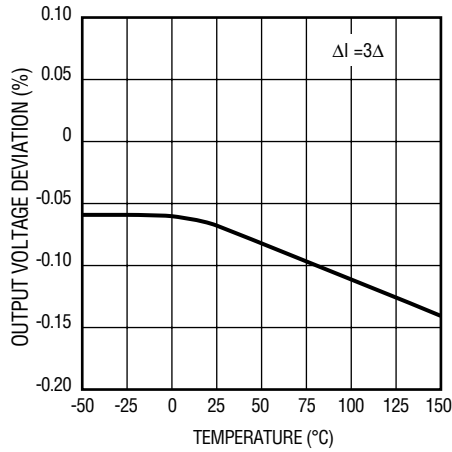
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Part Number Designator		
SMD #	Omnirel	Package
5962-8864601U	OM1850STM	TO-257 (Isolated)
5962-8864601N	OM1850NMM	SMD-1 (Non-Isolated)
5962-8864601X	OM1850NKM	TO-3

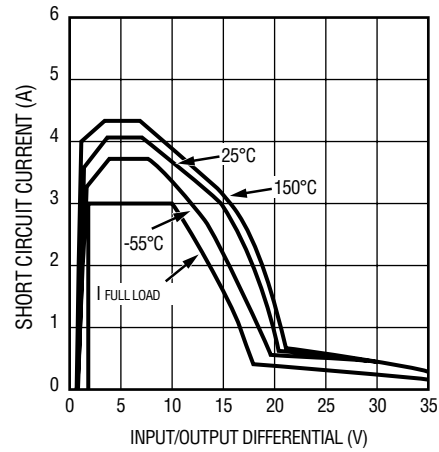

 International Rectifier Companies
The Hi-Rel Components & Subsystems Group


TYPICAL PERFORMANCE CHARACTERISTICS

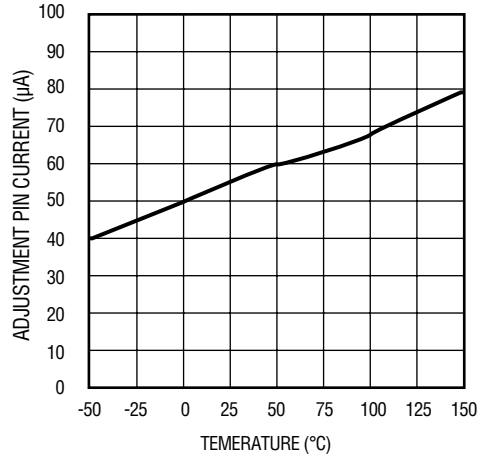
LOAD REGULATION



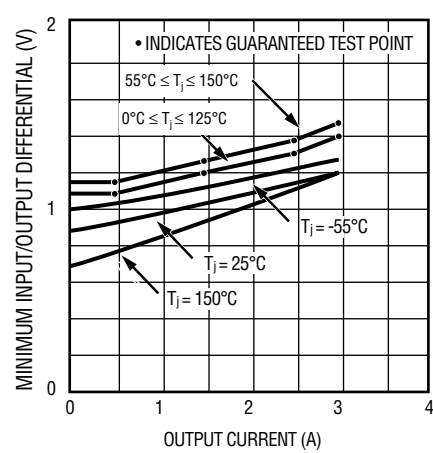
SHORT CIRCUIT CURRENT



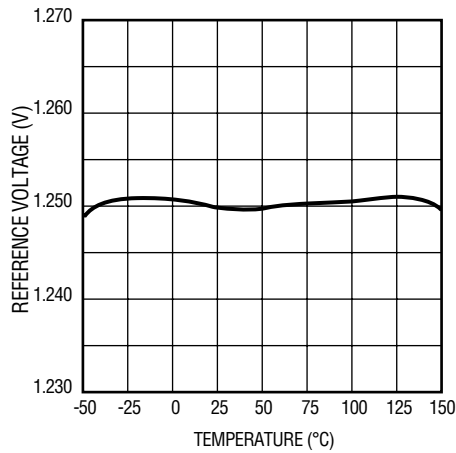
ADJUSTMENT PIN CURRENT



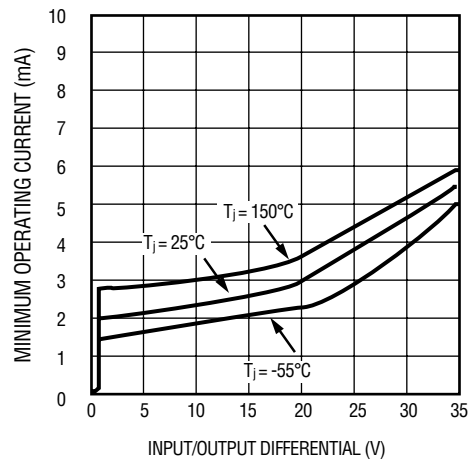
DROPOUT VOLTAGE



TEMPERATURE STABILITY



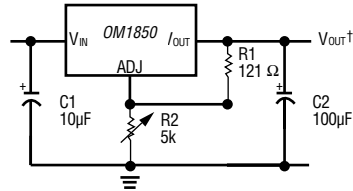
MINIMUM OPERATING CURRENT



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TYPICAL APPLICATIONS

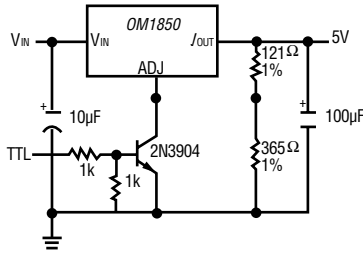
1.2V - 15V Adjustable Regulator



*NEEDED IF DEVICE IS FAR FROM FILTER CAPACITORS

$$V_{OUT} = 1.25V \left(1 + \frac{R2}{R1}\right)$$

5V Regulator with Shutdown



MECHANICAL OUTLINES

